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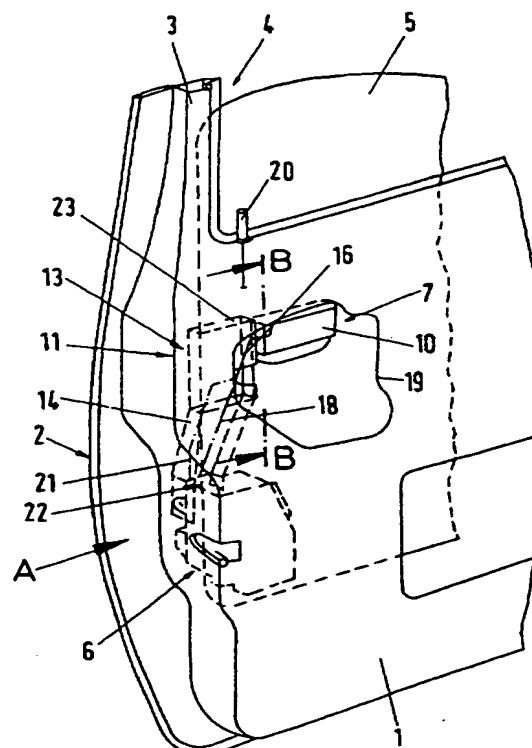
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(54) Motor vehicle door lock module with anti-theft shield

(57) A motor vehicle door has an inner panel 1, an outer panel 2, a door window frame 3, and a window glass 5 which is guided vertically in a sliding guide 4. An exterior handle (8, fig. 2) controls an operating device 7 for door lock 6. Door lock 6 and a receiver part 10 for exterior handle 8 are combined by means of a supporting element 11 to form an installation module 13. Both inner and outer door panels are designed for the introduction and installation of module 13, which comprises a supporting element 14 for the door lock. Element 14 is constructed as a U-shaped sectional part, which at least covers the lock rod 18 leading from the exterior handle to the door lock 6 for security purposes. Element 14 may be made of plastic.

Fig.3



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Fig.1

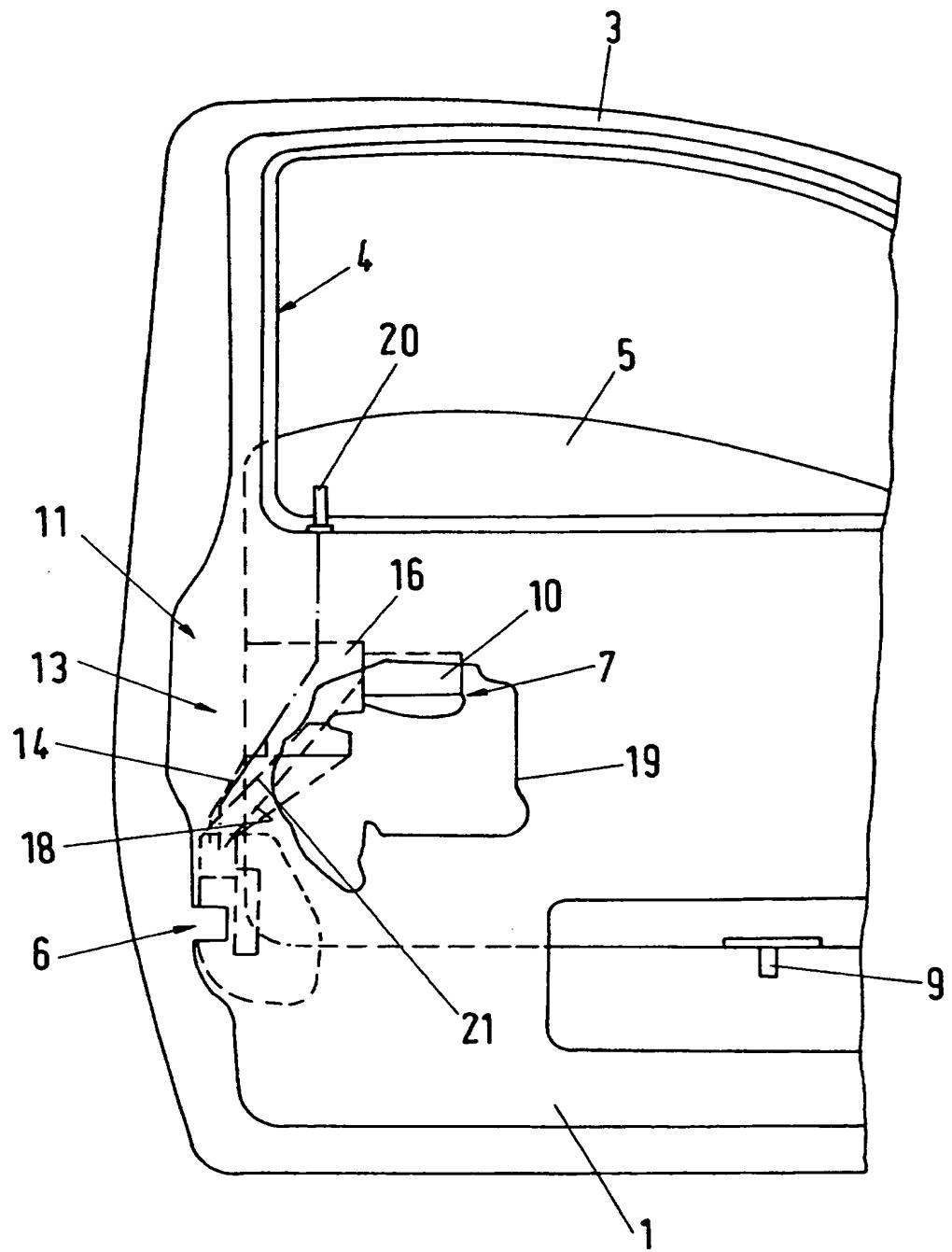


Fig.2

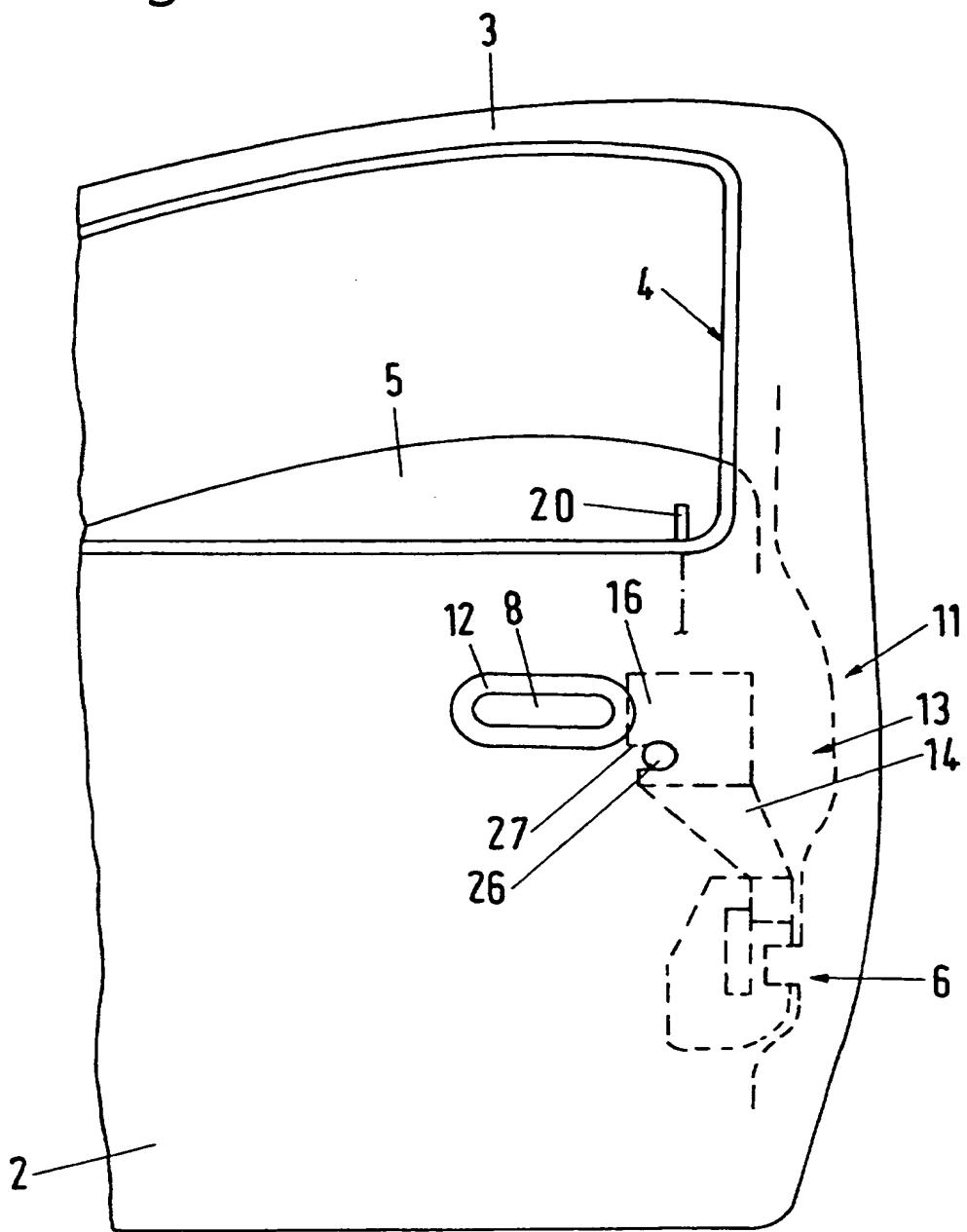


Fig.3

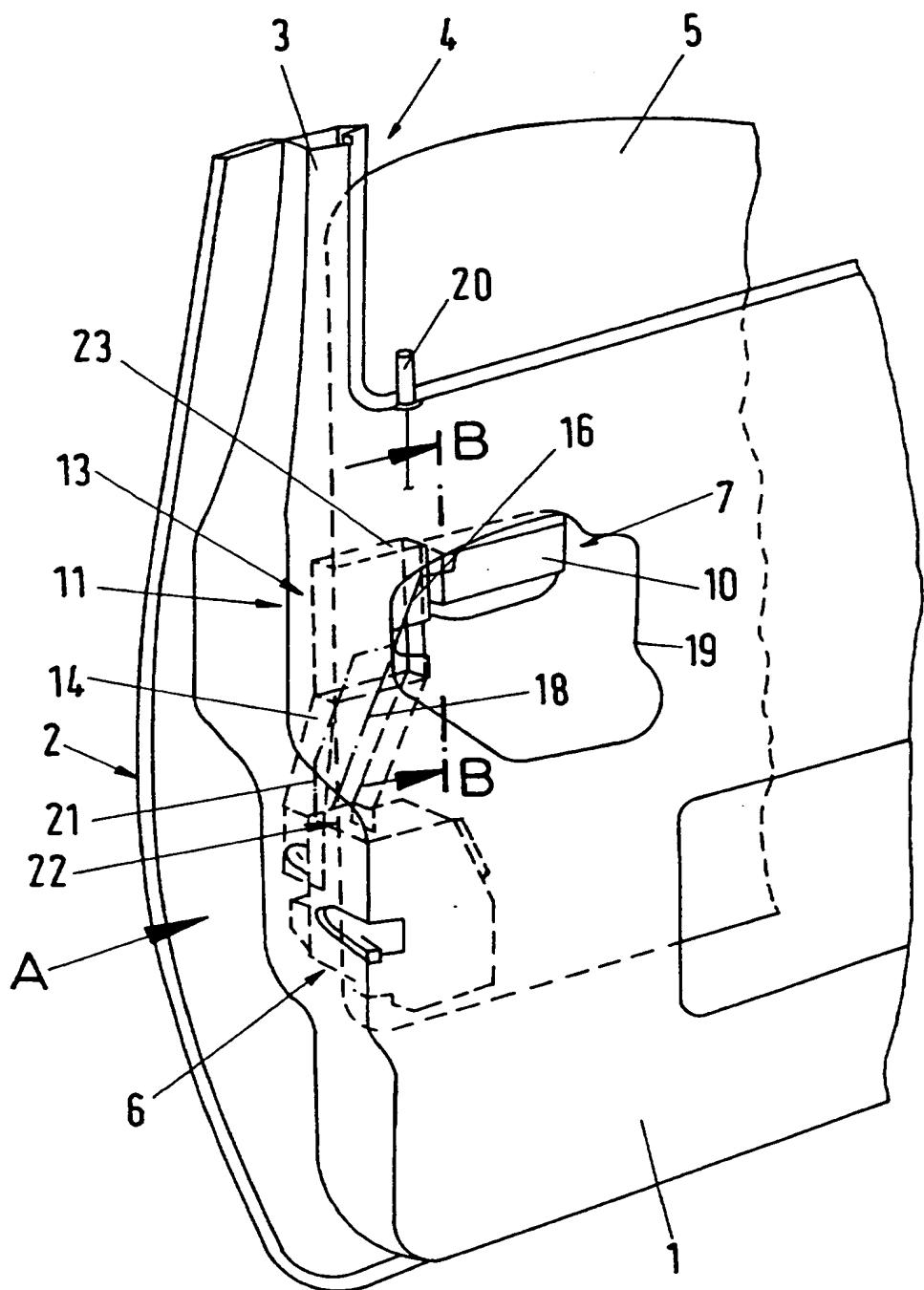
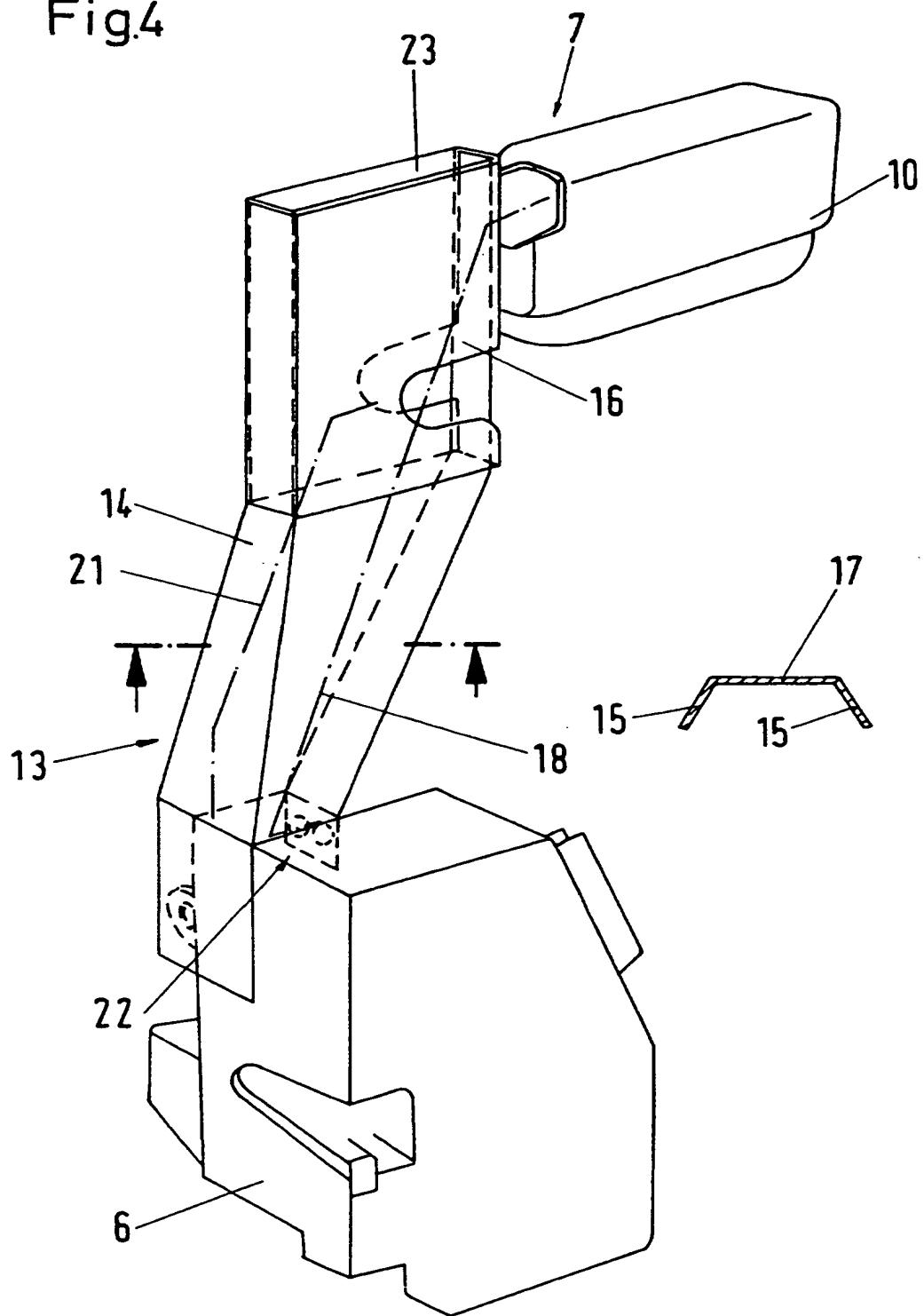
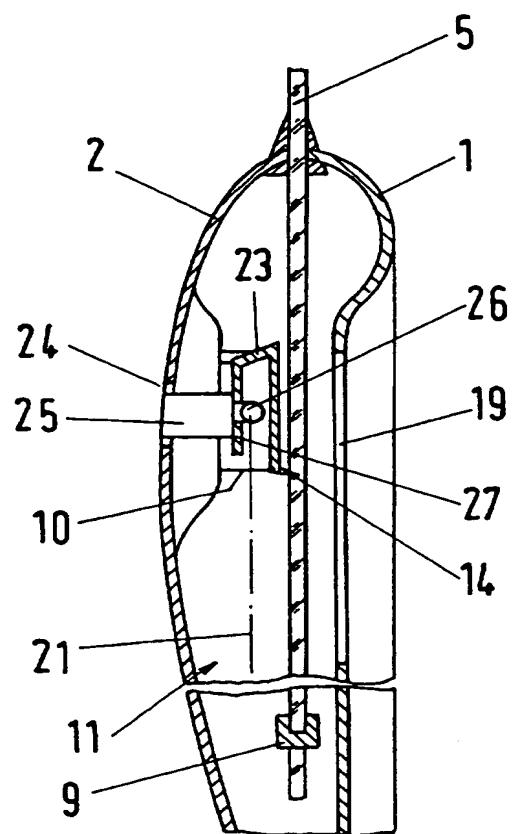


Fig.4



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Fig.5



MOTOR VEHICLE DOOR

This invention relates to a motor vehicle door having an inner panel, an outer panel and a door window-frame, and having a window glass which can move up and down and which is guided in a sliding guide of the door window-frame, and having 5 a door lock, an operating device for the door lock, an exterior handle for the operating device and a window-glass raising device, wherein the door lock and a receiver part for the exterior handle are combined by means of a supporting element to form an installation module and the inner panel and 10 the outer panel of the motor vehicle door are designed for the introduction and installation of the installation module. It is to be understood that the exterior handle, optionally with its handle dish, is fitted from the outside.

In the known motor vehicle door of the type described 15 initially and from which the present invention stems (EP 0 400 505 B1), the installation part is a single-function component. It merely serves to join the door lock, the operating device for the door lock and the receiver part for the exterior handle to form a complete unit which is easily installable, 20 namely the installation module. For this purpose, the supporting element is of angular form so that the insertion opening for the lock mounting in the end face of the motor vehicle door is exposed. A connecting part for the receiver part of the exterior handle adjoins the inner panel or the 25 outer panel of the motor vehicle door, substantially parallel thereto. The installation of the door lock and the exterior

handle is facilitated and simplified due to the installation module. The window glass, which is guided in the window glass guide so that it can move up and down, also extends substantially parallel to the outer panel or inner panel of the motor vehicle door. The window glass guide is neither structurally nor functionally connected to the installation module. It is disposed in the door window-frame and for the most part hardly extends into the intermediate space between the door inner panel and the door outer panel, into which the installation module is introduced.

A basic problem which underlies the present invention is to effect the fashioning and arrangement of the components for a motor vehicle door of the construction described initially so that the installation of the door lock and of the exterior handle can be effected in a simple manner, as before, by means of the installation module, and so that increased protection from theft is provided at the same time.

According to the present invention, there is provided a motor vehicle door having an inner panel an outer panel and a door window-frame, and having a window glass which can move up and down and which is guided in a sliding guide of the door window-frame, and having

a door lock,

an operating device for the door lock,

an exterior handle for the operating device, and

a window-glass raising device,

wherein the door lock and a receiver part for the exterior handle are combined by means of a supporting element to form

an installation module and the inner panel and the outer panel of the motor vehicle door are designed for the introduction and installation of the installation module, characterised in that a multifunctional component is disposed 5 as an installation module between the inner panel and the outer panel of the motor vehicle door in the region of the door lock to be installed,

which multifunctional component comprises a supporting element for the door lock and the door lock fixed thereto, 10 and

has a connecting part to which the receiver part for the exterior handle is attached, and that the supporting element is constructed as a U-shaped sectional part which at least covers the lock rod leading 15 from the exterior handle to the door lock.

The multifunctional component is a special installation module; it increases the protection from theft because the supporting element covers the lock rod. According to a preferred embodiment of the invention, the supporting element also satisfactorily covers the operating rod leading 20 from the lock barrel to the door lock. The latter is for the most part only put into effect when the lock rod which leads from the locking button on the inside of the door to the door lock does not run idle when the door is in its locked state. 25 If the lock rod runs idle, this generally also puts into effect the anti-theft operating position.

The invention stems from the recognition that, for a motor vehicle door of the construction described initially, a

specially constructed and oriented supporting element for the door lock and for the receiver device for the exterior handle can serve at the same time to provide increased protection from theft. The supporting element in the form of the U-shaped sectional part functions as a security cover, and in its installed state it covers the lock rod or lock rods. Consequently, the lock rod can no longer be operated in an unauthorised manner by a suitable instrument or tool which is inserted from the outside past the window glass into the interior space between the door inner panel and the door outer panel when the motor vehicle door is closed and locked.

In detail, numerous possibilities exist within the scope of the invention for further developing and fashioning the motor vehicle door according to the invention. The door lock may be fixed in a simple manner to the multifunctional component by providing the door lock with a fixing element at its top edge and fixing it by this fixing element to the supporting element of the multifunctional component. The supporting element, which is constructed as a U-shaped component, is fashioned so that it is sufficiently deformable to compensate for tolerances on installation. The connecting part advantageously has an angled portion and the receiver part for the exterior handle is attached to the latter. If the outer panel of the motor vehicle door has a recess in which a lock barrel for the associated door lock is inserted, the arrangement is advantageously effected so that the lock barrel has a peg at its end facing the interior of the vehicle and the peg is mounted in a peg recess in the supporting

element.

The arrangement can be effected without difficulty so that the inner panel of the motor vehicle door has a recess which is designed for the introduction and installation of the said multifunctional component with the door lock fixed thereto and the receiver part for the exterior handle. The elements of the multifunctional component described above may consist, for example, of sheet metal. They may also consist of correspondingly designed plastic material, however. In order to permit the installation of the multifunctional component in the motor vehicle door in a simple manner, all the connecting parts between the multifunctional component and the motor vehicle door are designed so that installation with compensation for tolerances is possible.

It falls within the scope of the invention to dispense with an interior locking button and to effect the arrangement so that locking and unlocking can also be effected from the interior operating device. The teaching of the present invention is also advantageous in this connection.

The invention is described in more detail below with reference to the drawings, which are merely schematic illustrations of an example of an embodiment, and where:

Figure 1 is a view of a motor vehicle door according to the invention with the door trim removed and with the multifunctional component installed;

Figure 2 shows the motor vehicle door of Figure 1 from the outside;

Figure 3 is a perspective view, on an enlarged scale

compared with Figure 1, of the essential elements of the multifunctional component, shown as a partially cut-away drawing of the subject of Figure 1;

5 Figure 4 is a view of the multifunctional component of Figure 3, shown enlarged even further, as seen in the direction of arrow A; and

Figure 5 is a section in the direction B-B through the subject of Figure 3, on the same scale as Figure 3.

10 The motor vehicle door illustrated in Figures 1 and 2 has an inner panel 1, an outer panel 2 and a door window-frame 3, and also has a window glass which can move up and down and which is guided in a sliding guide 4 in the door window-frame 3. The window glass and its guide do not form part of the present invention. The Figures show a door lock 6, an operating device 7 for the door lock 6, and an exterior handle 8, which is generally accommodated in a handle dish, for the operating device 7. A window glass raising device is also provided, one component 9 of which is indicated in Figures 1 and 5. This likewise does not form part of the present

15 invention.

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The door lock 6 and a receiver device 10 for the exterior handle 8 are combined to form an installation module by means of a component 11. In the embodiment illustrated, the exterior handle 8 is disposed in a dish 12. The inner panel 1 and the outer panel 2 of the motor vehicle door are designed for the introduction and installation of the installation module.

25 It can be seen from Figure 3 that a multifunctional

component 13 is disposed as an installation module between the inner panel 1 and the outer panel 2 of the motor vehicle door. The multifunctional component 13 comprises a supporting element 14 for the door lock 6 and the door lock 6 fixed thereto. The receiver part 10 for the exterior handle 8 is attached to a connecting part 16. The supporting element 14 is constructed as a U-shaped sectional part which at least covers the lock rod 18 leading from the exterior handle 8 to the door lock 6. The inner panel 1 of the motor vehicle door has a recess 19 which permits the introduction and installation of this installation module 13 with the door lock 6 fixed thereto, and of the receiver part 10 for the exterior handle 8. The recess 19 is designed accordingly. It can be seen in particular from Figure 4 that the supporting element 14 in this embodiment is designed as a U-shaped sectional part, so that it also covers the operating rod 21 leading from the lock barrel 25 to the door lock 6. The section through the sectional part shown inset in Figure 4 enables the section flange and the section web 17 to be seen. It is not necessary to cover the lock rod leading from the locking button 20 to the door lock 6 if this lock rod and the locking button 20 on the inside of the motor vehicle door run idle when the door lock 6 is in its locked state. It can be seen from Figure 3 that the door lock 6 has a fixing element 22 at its top edge and is fixed by this fixing element to the supporting element 14 of the multifunctional component 13. The connecting part 16 has an angled portion 23 and the receiver part for the exterior handle is fixed to the latter. It has already been

mentioned that the exterior handle is optionally fitted together with its handle dish. The component parts of the multifunctional component may be joined in any desired manner, e.g. by screws or clips. It is also possible for the 5 supporting element 14 to be assembled from a plurality of parts.

Figure 5 shows the form of construction in which the outer panel 2 of the motor vehicle door has a recess 24 in which a lock barrel 25 is inserted. Moreover, the arrangement 10 is effected here so that the lock barrel 25 has a peg 26 at its end facing the interior of the vehicle, the peg 26 being mounted in a peg recess 27 in the supporting element 14.

CLAIMS

1. A motor vehicle door having an inner panel an outer panel and a door window-frame, and having a window glass which can move up and down and which is guided in a sliding guide of the door window-frame, and having

5 a door lock,

an operating device for the door lock,

an exterior handle for the operating device, and

a window-glass raising device,

wherein the door lock and a receiver part for the exterior handle are combined by means of a supporting element to form an installation module and the inner panel and the outer panel of the motor vehicle door are designed for the introduction and installation of the installation module, characterised in that a multifunctional component is disposed as an installation module between the inner panel and the outer panel of the motor vehicle door in the region of the door lock to be installed,

which multifunctional component comprises a supporting element for the door lock and the door lock fixed thereto, and

20 has a connecting part to which the receiver part for the exterior handle is attached,

and that the supporting element is constructed as a U-shaped sectional part which at least covers the lock rod leading from the exterior handle to the door lock.

25 2. A motor vehicle door according to claim 1, characterised in that the supporting element also at least

substantially covers the operating rod leading from the lock barrel to the door lock.

3. A motor vehicle door according to either one of claims 1 or 2, characterised in that the door lock has a fixing element at its top edge and is fixed by the fixing element to the supporting element of the multifunctional component.

4. A motor vehicle door according to any one of claims 1 to 3, characterised in that the supporting element constructed as a U-shaped component is fashioned so that it is sufficiently deformable to compensate for tolerances.

5. A motor vehicle door according to claim 4, characterised in that the supporting element is elastically deformably constructed from plastic.

6. A motor vehicle door according to any one of claims 1 to 5, characterised in that the connecting part has an angled portion and the receiver part for the exterior handle is attached to the latter.

7. A motor vehicle door according to any one of claims 1 to 5, in the form of construction in which the outer panel of the motor vehicle door has a recess in which a lock barrel is inserted, characterised in that the lock barrel has a peg at its end facing the interior of the vehicle and the peg is mounted in a peg recess in the supporting element.

5
8. A motor vehicle door according to any one of claims 1 to 7, characterised in that the inner panel of the motor vehicle door has a recess which permits the introduction and installation of the multifunctional component

with the door lock fixed thereto and with the receiver part for the exterior handle.

9. A motor vehicle door, substantially as hereinbefore described with reference to the accompanying drawings.



The Patent Office

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Application No: GB 9606093.4
Claims searched: All

Examiner: Ken Strachan
Date of search: 19 June 1996

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): B7B: BAD, BAM352;
Int Cl (Ed.6): B60J: 5/00, 5/04, 5/10;
E05B: 65/12, 65/16, 65/20;

Other: Online database: WPI.

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
Y	EP 0,400,505A1	(Fiat) Notice integration of door lock and receiver for exterior handle in fig. 4.	1, 2, 4, 5, at least.
Y	US 5,226,259	(Nissan) See fig. 7; notice cover 30 for lock rod 58.	1, 2, 4, 5, at least.
Y	US 4,603,894	(General) See figs. 1 and 2, col. 2 lines 44 to 53; notice interlocking covers 130, 48 for lock rod 80.	1, 2, 4, 5, at least.

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

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